

## 103<sup>rd</sup> Meeting of the LHC Collimation Working Group, April 27<sup>th</sup>, 2009

*Present:* Oliver Aberle, Ralph Assmann (chairman), Giulia Bellodi, Chiara Bracco, Fritz Caspers, Mario Deile, Mathias Philippe Dutour, Barbara Eva Holzer, Roberto Losito, Daniela Macina, Alessandro Masi, Xavier Pons, Ernst Radermacher, Sylvain Ravat, Stefano Redaelli (scientific secretary), Federico Roncarolo, Alexander Ryazanov, George Smirnov, Benjamin Todd, Siegfried Wenig, Jörg Wenninger, Daniel Wollmann.

### Comments to the minutes

No comments to the previous minutes.

### Agenda of this meeting

- Status of CCC applications for the Roman pot control (S. Redaelli)
- Roman pot control system (M. Ph. Dutour)
- The Roman pot interlocks (M. Deile)
- Position control of the Roman pot (X. Pons)

### List of actions from this meeting

Action	People	Deadline
Inputs expected from TOTEM before the beam operation: (1) hardware parameters for the mechanical references (2) handling critical calibration data for LVDT sensors (3) hardware commissioning in the tunnel and feedback to OP	TOTEM (support OP)	Summer 2009
Follow-up open issues for software implementation, as found in first controls integration tests.	S. Redaelli M. Dutour S. Ravat	Before HWC
Implementation of a 'move pot out' command for quickly extracting the pots without typing in settings	M. Dutour	Summer 2009
Agreement on Roman pot names for the communication between TOTEM control room and CCC during operation	TOTEM OP	Before HWC
Interlock strategy: need to review the interlock logic that disables the LVDT checks if all switches are ON. What if one switch gets blocked into the ON mode but the pot is not in home position?	TOTEM MPP/OP	Summer 2009
Change of definition of "beam energy for physics" for the cross-calibration runs of Roman pots/collimator postions.	MPP	Before beam op.

(Complete list at <http://lhc-collimation.web.cern.ch/lhc-collimation/action.htm>)

**The next meeting will be announced.**

# Minutes of the meeting

## 1 A.O.B

- R. Assmann announced that the structure of working groups within the new organization was discussed at the last LMC meeting. It was agreed that the Collimation Working Group will be maintained and called Collimation Study Group. This will be the forum for discussing the settings of all LHC movable devices and operational aspects related to the collimator operation. The minutes of the LMC meeting with Ralph's presentation on the mandate for the collimation study group are publicly available on the LMC site ([11th meeting held on April 22nd, 2009](#)).
- In order to concentrate the collimation meetings it has been decided to combine the Phase II specification meeting with the collimation study meeting.

## 2 Status of CCC applications for the Roman pot controls ([S. Redaelli](#))

S. Redaelli presented the status of the top-level controls for the Roman pots and the results of integration tests performed by him, M. Dutour, S. Ravat and I. Atanassov. Details of the results achieved, including a preliminary validation of the machine protection functionality of the system, are available in Stefano's slides.

S. Redaelli listed the expected inputs from the TOTEM team that are necessary for the configuration of the control systems at various levels and for the tests to be performed in preparation for the beam operation. This will be followed up in the next months by the TOTEM team with support from OP. In particular, it is important to agree as soon as possible on the names of the different Roman pot as they will be used during beam operation for the communication between the TOTEM control room and the OP team.

## 3 The Roman pot controls ([M. Dutour](#))

Mathias Philippe Dutour resented the status of the middle- and low-level Roman pot controls, with details on the use-cases for the pot operation. Details are available in the recently approved [EDMS document number 937276](#).

M. Ph. Dutour mentioned that the DIM control application can access directly the PXI system that controls the Roman pots. S. Redaelli commented that this access should be blocked during the beam operation in order to make sure that the pots will only be moved from the CCC.

R. Assmann requested that a 'move pot out' command is implemented in the middle-level controls in order to enable operators to quickly move out the pot in case of emergency, without having to type in setting. With the present interlock implementation, the pots will be retracted out of the beam if the beam mode is changed to UNSTABLE. M. Dutour will investigate the possibility of implementing the additional implementation proposed by Ralph.

The pot motor speed is set to 250  $\mu\text{m/s}$ . R. Assmann commented that this value cannot be changed without approval of the machine protection team because this has implications on the interlock response time (if the pot speed is too high, the speed of interlock checks must also be increased to ensure the same response time).

As a comment to the presented chain of commands to extract the Roman pots (see p. 8 of M. Dutour's slides), A. Masi stated that it would be preferable to disable the motor drivers instead of powering OFF the PXI in order to prevent pot movements.

#### 4 The Roman pot interlocks ([M. Deile](#))

M. Deile presented the implementation of the Roman pot interlocks. During the discussion, it came out that the SWITCH-ON condition is used to by-pass the check of the LVDT's that are used for position interlocking. There was a general agreement that this approach should be reviewed because we would loose control of the machine protection checks of the pot position if for any reason the switched got stacked in the ON position while the pot is into the beam. **Action** This aspect will be reviewed by the Machine Protection panel.

#### 5 Position control of the Roman pots ([X. Pons](#))

X. Pons reviewed the Roman pot position controls and the strategy for the sensor calibration. A note that describes the procedure to perform the sensor calibration has been prepared and is under engineering approval. People interested were welcomed to have a look the ([EDMS document num. 994971](#)).

R. Assmann commented that, in order to be ready for remote commissioning tests, we need as soon as possible to have a planning on the hardware and beam commissioning tests of the Roman pots, to be done together with the collimation tests. This will be provided by the TOTEM team as soon as it will be available.

In relation to the calibration tests with beam for the alignment of the Roman pots with respect to the LHC collimators, J. Wenninger commented that we need to carefully decide how to change the physics energy for interlocks (needed for the computation of the 'movable device' beam flag), if calibration runs are needed at different beam energies.

**The next meeting will be announced.**